Tuberculosis in Ontario 1982

Prepared from the Ontario Tuberculosis Register

Ministry of Health
Ontario

TABLE OF CONTENTS

Page

INTRODUCTION..... 1

TUBERCULOSIS MORBIDITY..... 2-7

Table 1 Age-Specific Morbidity for Males and Females - Active Tuberculosis - Ontario 1982..... 4

Figure 1 Tuberculosis Morbidity by Age and Sex Ontario 1978 - 1982..... 5

Table 1A Tuberculosis Morbidity Rates for Males and Females, Ontario 1978 - 1982..... 6

SITE AND TYPE OF DISEASE..... 8-11

Table 2 Site and Type of Disease - Active Tuberculosis - Ontario 1978 - 1982....8

Table 2A Site and Type of Disease - Active Tuberculosis - Ontario 1978 - 1982.....10

BACTERIOLOGICAL STATUS.....12-15

Table 3 Bacteriological Status - Active Tuberculosis - Ontario 1982..... 12

Table 3A Bacteriological Status - Active Tuberculosis - Ontario 1978 - 1982..... 14

POST-PRIMARY RESPIRATORY TUBERCULOSIS.....16-17

Table 4 Extent of Disease - Post-Primary Respiratory Tuberculosis - Ontario 1978 - 1982..... 16

REACTIVATED TUBERCULOSIS.....18-21

Table 5 Reactivated Tuberculosis - Ontario 1982..... 18

Table 5A Reactivated Tuberculosis - Ontario 1978 - 1982
Reactivated Tuberculosis as Percentage of Total Cases..... 18

Table 6 Length of Inactive Interval Reactivated Tuberculosis - Ontario 1978 - 1982..... 20

TABLE OF CONTENTS, CONTINUED:

PREVIOUS X-RAY APPEARANCE.....22-23

Table 6A Previous X-Ray Appearance - Ontario 1982..... 22

TUBERCULOSIS MORBIDITY IN THE MAIN POPULATION GROUPS.....24-29

Table 7 Tuberculosis Morbidity Among Canadian and Foreign-Born - Active Tuberculosis - Ontario 1982..... 24

Table 7A Site and Type of Disease Among Canadian and Foreign-Born - Active Tuberculosis - Ontario 1982..... 26

Table 8 Country of Birth and Year of Arrival in Canada - Foreign-Born Cases of Active Tuberculosis - Ontario 1982..... 28

THE DETECTION OF TUBERCULOSIS.....30-33

Table 9 Method of Detection - Active Tuberculosis - Ontario 1982..... 30

Table 9A Method of Detection by Type and Extent of Disease - Active Respiratory Tuberculosis - Ontario 1982..... 32

Table 9B Reason for Detection by Type and Extent of Disease - Active Respiratory Tuberculosis - Ontario 1982..... 32

TUBERCULOSIS MORBIDITY IN THE VARIOUS AREAS OF ONTARIO.....34-43

Table 10 Morbidity Rates for Province and Rate by Regions, Counties and Districts per 100,000 - Active Tuberculosis - Ontario 1978 - 1982.....34-37

Table 11 Active Tuberculosis in the Major Ontario Cities - 1978 - 1982..... 38

Table 11A Active Tuberculosis in Metropolitan Toronto - 1979 - 1982..... 41

Table 12 Active Tuberculosis in Principal Cities in Ontario 1978 - 1982..... 42

TABLE OF CONTENTS, CONTINUED:

NOTIFICATION OF ACTIVE TUBERCULOSIS.....44-45

Table 13 Notified Cases by Counties - Active Tuberculosis - Ontario 1978 - 1982..... 44

OCCUPATION OF PERSONS WITH ACTIVE DISEASE.....46-49

Table 14 Active Tuberculosis by Occupation in Ontario 1982..... 46

Table 14A Active Tuberculosis by Occupation - Health Care Personnel - Ontario 1981 and 1982..... 48

TUBERCULOSIS MORTALITY.....50-53

Table 15 Deaths Attributed to Tuberculosis - Ontario 1982..... 50

Figure 2 Trend in Tuberculosis Mortality Ontario 1900 - 2000..... 53

MANAGEMENT OF TUBERCULOSIS.....54-55

Table 16 Initial Management of Tuberculosis Active Cases - Ontario 1982..... 54

APPENDIX I

BOVINE TUBERCULOSIS - ONTARIO 1982 56

APPENDIX II

TUBERCULOSIS CASES NOT INCLUDED IN THIS REPORT 57

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INTRODUCTION

"Tuberculosis in Ontario - 1982" was prepared from the Ontario Tuberculosis Case Register by the Data Support Service of the Public Health Branch of the Ontario Ministry of Health. Data processing was carried out by the Information Systems Division.

The Chest Disease Service which formerly prepared the report, "Tuberculosis in Ontario", was terminated on December 10, 1982. The tuberculosis-related case-load of the provincial chest clinics was transferred to physicians in the general health care system. Local Official Health Agencies continue to maintain control of tuberculosis in their respective areas. A few of the Chest Disease Service Staff were transferred to the Disease Control and Epidemiology Service and the Data Support Service of the Public Health Branch and continue to collect data on tuberculosis contained in this report.

The Case Register started in the Fall of 1959 and since that date has recorded, annually, all known new and reactivated cases of tuberculosis in the Province. Information concerning each case is derived from notifications - as required by Section 64 and Regulation 703 of the Public Health Act. In addition, laboratory reports, Hospitals for Chest Diseases admission and discharge notices, outpatient treatment reports and notification of deaths (from the Registrar General) furnish valuable information, at times predating the official Notification of Tuberculosis.

In this report, "Tuberculosis in Ontario - 1982", the epidemiology of the disease is presented. Comparisons are made with previous years to show trends which in turn may be used to evaluate existing programmes in specific geographic areas.

TUBERCULOSIS MORBIDITY IN ONTARIO

1978 - 1982

YEAR	NUMBER OF CASES	RATE PER 100,000
1978	0817	9.7
1979	0779	9.2
1980	0949	11.1
1981	0795	9.2
1982	0743	8.5

TUBERCULOSIS MORBIDITY 1982

For the calendar year, 1982, there were 743 registered cases of active tuberculosis in Ontario. Of these, 56 (7.5%) were classified as reactivations, having a documented history of previous active disease; the remaining 687 cases were classified as new active.

The morbidity rate, for the 8,715,800 population at risk in Ontario, was 8.5/100,000. New active disease incidence was 7.9/100,000, reactivations 0.7/100,000.

These figures represent a 6.5% decrease in the number of cases reported for 1981 (795) and a consequent 7.6% drop in morbidity rate (9.2/100,000) from 1981.

It can be seen from the table opposite, that, after a fairly sharp rise in morbidity rate in 1980 - from 9.2 to 11.1 per 100,000 - due to the influx of South-East Asian refugees, many with active tuberculosis, the rate is continuing to decline and has now reached its lowest point since reporting of tuberculosis case rates was commenced. The rate per 100,000 in 1982 - 8.5 - is just over one half of the rate in 1972 - 16.1 - and less than one third of the rate in 1962 - 27.8.

A number of factors account for the continuing decline in tuberculosis morbidity, including the case-finding efforts of previous years, the availability and administration of excellent chemotherapeutic agents and the use of chemoprophylaxis. Further progress towards the eradication of this once dreaded disease will depend on physicians' awareness of tuberculosis in differential diagnosis, adequate supervision of all cases to ensure chemotherapy is taken as prescribed for the full period of treatment, and surveillance of contacts and prescription of chemoprophylaxis when indicated.

TABLE 1

AGE-SPECIFIC MORBIDITY FOR MALES AND FEMALES

ACTIVE TUBERCULOSIS - ONTARIO 1982

AGE GROUP	MALES			FEMALES			TOTAL		
	NUMBER WITH ACTIVE TUBERCULOSIS	POPULATION* AT RISK	RATE PER 100,000	NUMBER WITH ACTIVE TUBERCULOSIS	POPULATION* AT RISK	RATE PER 100,000	NUMBER WITH ACTIVE TUBERCULOSIS	POPULATION* AT RISK	RATE PER 100,000
0 - 4	4	305,195	1.3	1	290,625	0.3	5	595,820	0.8
5 - 9	0	312,811	0.0	1	297,188	0.3	1	609,999	0.2
10 - 14	1	343,834	0.3	4	326,007	1.2	5	669,841	0.7
15 - 19	11	403,151	2.7	9	383,366	2.3	20	786,517	2.5
20 - 24	33	400,776	8.2	29	401,814	7.2	62	802,590	7.7
25 - 34	75	718,346	10.4	74	745,599	9.9	149	1,463,945	10.2
35 - 44	64	566,993	11.3	36	564,912	6.4	100	1,131,905	8.8
45 - 54	51	472,331	10.8	34	464,571	7.3	85	936,902	9.1
55 - 64	67	395,117	17.0	46	430,900	10.7	113	826,017	13.7
65 - 69	30	142,098	21.1	18	167,042	10.8	48	309,140	15.5
70+	89	226,796	39.2	66	356,328	18.5	155	583,124	26.6
NOT KNOWN	0	-	-	0	-	-	0	-	-
TOTAL	425	4,287,448	9.9	318	4,428,352	7.2	743	8,715,800	8.5
PERCENTAGE	57.2			42.8			100.0		

* POPULATION ESTIMATES FOR 1982 PROVIDED BY ONT. MINISTRY OF TREASURY AND ECONOMICS

FIGURE 1

TUBERCULOSIS MORBIDITY BY AGE AND SEX

ONTARIO 1978-1982

(Rates per 100,000 Population)

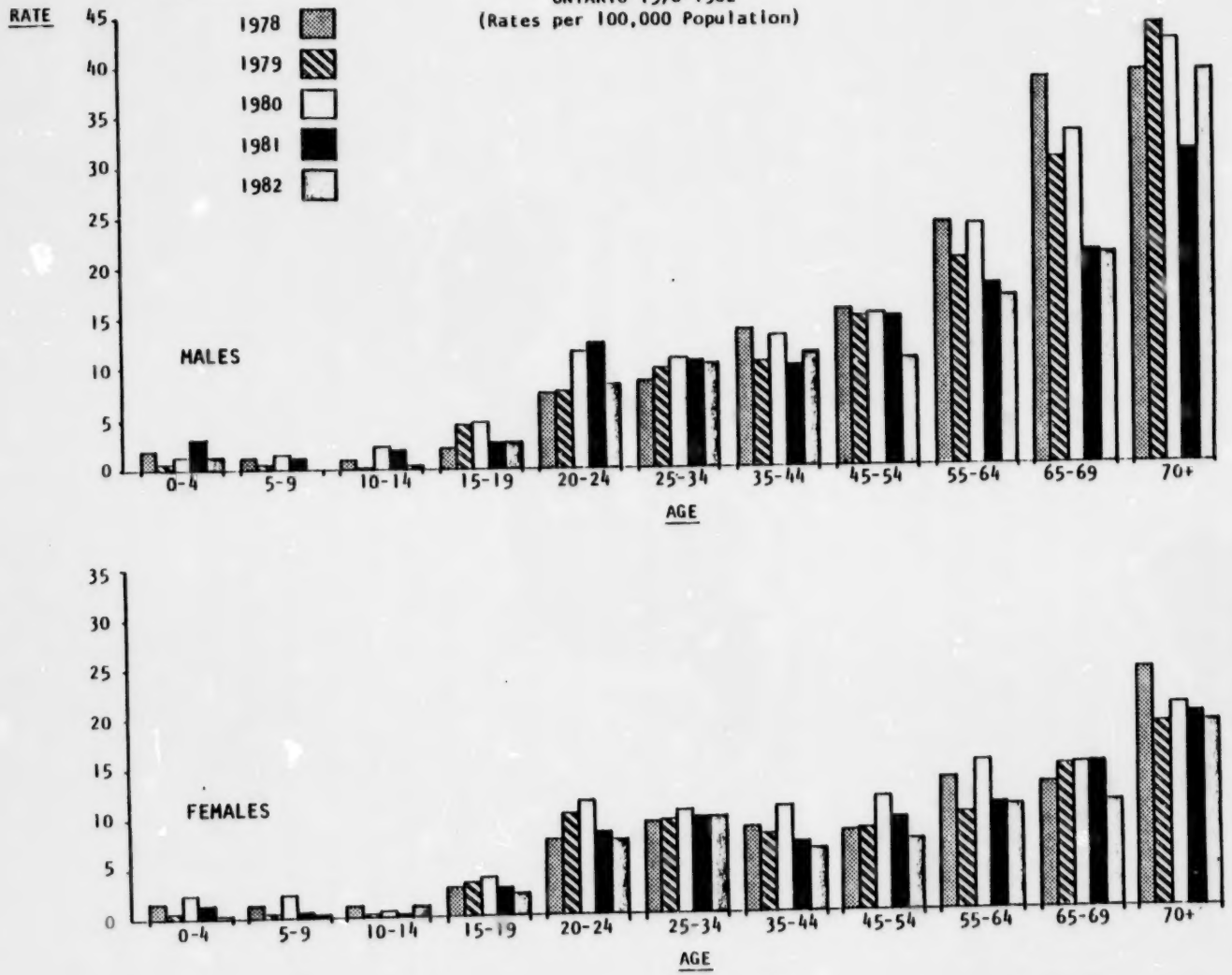

TABLE 1A

TUBERCULOSIS MORBIDITY RATES FOR MALES AND FEMALES

ONTARIO 1978 - 1982

YEAR	AGE GROUP 0 - 24		25+	
	M	F	M	F
1978	2.9	3.2	17.9	11.5
1979	3.0	3.4	16.7	10.4
1980	4.7	4.5	18.4	12.9
1981	4.6	3.0	15.0	10.9
1982	2.8	2.6	14.9	10.0

AGE AND SEX DISTRIBUTION

The age and sex distribution of the 743 active cases and the age-specific morbidity rates for males and females are shown in Table 1. The 1982 morbidity rates are compared with those of preceding years in Figure 1 and Table 1A.

Tuberculosis has long been known as a disease with a predilection for young people. This was previously true in North America, and the characteristic persists in parts of the world where the disease is prevalent. However, in the past few decades, the epidemiological pattern has changed in Canada - and elsewhere - where it is now increasingly a disease of older people. This is clearly seen in the 1982 figures.

Of the 743 cases, 54% (401) were 45 years and over; only 30% of the population were in this age-group. The rate per 100,000 persons 45 years and over was 15.1 compared with 2.7 in those under 25 years (only 93 cases). There were 203 cases in the age-group 65 years and over, for a rate of 22.75 per 100,000. Whereas only 10.2% of the population were 65 years and over, 27.3% of all cases of tuberculosis were in this age-group.

Males contributed 57.2% to the total active tuberculosis cases, an increase of 0.3% from 1981. The male to female ratio was 1.33:1. Most of this difference between males and females was found in the older age groups. Thus while the cases under 25 years are almost equally divided - 49 males and 44 females - of the 650 persons 25 years and over, 376 were males (57.8%) and 274 females, giving respective morbidity rates of 14.9 and 10.0 per 100,000 population.

TABLE 2

SITE AND TYPE OF DISEASE

ACTIVE TUBERCULOSIS - ONTARIO 1982

RESPIRATORY TUBERCULOSIS

DIAGNOSIS	NUMBER	PERCENT OF RESPIRATORY CASES	PERCENT OF ALL CASES
POST-PRIMARY TOTAL	506	88.9	68.1
1.FAR ADVANCED	69	12.1	9.3
2.MODERATELY ADVANCED	194	34.1	26.1
3.MINIM.& EXT.UNSPEC.	243	42.7	32.7
PRIMARY	10	1.8	1.3
MILIARY	16	2.8	2.2
PLEURISY	34	6.0	4.6
OTHER RESPIRATORY	3	0.5	0.4
TOTAL	569	100.0	76.6

NON-RESPIRATORY TUBERCULOSIS

DIAGNOSIS	NUMBER	PERCENT OF NON-RESPIRATORY CASES	PERCENT OF ALL CASES
GENITO-URINARY	49	28.2	6.6
LYMPH GLAND	77	44.3	10.4
BONE & JOINT	21	12.1	2.8
CENTRAL NERVOUS SYSTEM (MENINGITIS)	9	5.2	1.2
ALIMENTARY	9	5.2	1.2
SKIN	3	1.7	0.4
OTHER ORGANS	6	3.4	0.8
TOTAL	174	100.0	23.4

SITE AND TYPE OF DISEASE

Table 2 shows the breakdown, according to site and type of disease, for the 743 cases registered in 1982. There were 569 (76.6%) respiratory cases and 174 (23.4%) non-respiratory cases. This proportion has shown very little fluctuation over several years (see table 2A).

Post-Primary Tuberculosis, acknowledged to be the greatest potential source of infection, is of paramount importance to public health. This type of disease accounted for 506 (88.9%) of the respiratory cases, 68.1% of the total cases. Reactivation of previously diagnosed tuberculosis was defined in 41 (8.1%) of the post-primary cases; the remaining 465 (91.9%) were considered new active cases. This represents only a slight change from 1981 when 89.8% of the post primary cases were new active, 10.2% reactivations. Of the post-primary reactivations in 1982, 58.5% were male; of the new active disease, 62.2% were male. Distinguished by age groups, 14.6% of reactivations and 42.8% of new active cases occurred in the under-45 age group.

Primary tuberculosis showed a further decrease from 34 (3.6%) in 1980, 18 (2.3%) in 1981 to 10 (1.8%) in 1982. Of these 10 cases, four were under five years of age and six between five and 19 years of age.

Miliary Tuberculosis was reported in 16 cases, compared with eight cases in 1981: this is the largest number of cases since 1978 when there were 23. They accounted for 2.2% of all cases of tuberculosis. There were six cases in males and 10 in females. One of the female cases was a reactivation of previously known disease; the other 15 were all new cases.

In six of the 16 cases, diagnosis was made after death. Two other patients, diagnosed during life, died within weeks of starting treatment.

The ages of the patients with miliary tuberculosis ranged from 27 to 97 - five being under 45 years, and eight 70 years or over. Included in these eight cases 70 years or over are four of those diagnosed at autopsy and the two patients who died shortly after treatment was commenced.

The cases diagnosed as miliary tuberculosis included nine Canadians (including two Canadian Indians), four from European countries, and three from India.

Bacteriological confirmation was obtained in all but one of the cases of miliary tuberculosis: 12 were positive both on microscopy and culture, two on microscopy alone, and one on culture alone. Positive bacteriology was obtained from sputum (seven cases), lung tissue (seven cases), bone-marrow (three cases), urine (three cases), and bronchial washings (one case), liver (one case), lymph-node (one case) and hip aspirate (one case).

Pleurisy (34 cases) once again predominated in males (21 males, 13 females.) In all but one instance, the pleural effusions were reported to be new active disease; 21 (61.8%) cases were under 45 years of age.

Non-Respiratory Tuberculosis (174 cases) showed a 10% decrease in 1982 from 1981, when the corresponding number of cases was 194.

Genito-Urinary disease showed an increase of 14%. There were 49 cases, representing 28.2% of the total non-respiratory cases, as compared with 43 cases, 22.2% of total non-respiratory cases, in 1981. Reactivations accounted for 4 (8.2%) of the cases. 18 (40.0%) of the new cases were less than 45 years of age. The number of cases in both males and females increased. The number of males rose from 20 in 1981 to 25 in 1982, while females accounted for 23 cases in 1981 and 24 in 1982.

TABLE 2A

SITE AND TYPE OF DISEASE

ACTIVE TUBERCULOSIS - ONTARIO 1978 - 1982

		1978	1979	1980	1981	1982
RESPIRATORY						
POST-PRIMARY		538	523	651	528	506
PRIMARY		21	14	34	18	10
MILIARY		23	13	9	8	16
PLEURISY		40	33	39	39	34
OTHER		4	6	13	8	3
	NUMBER	626	589	746	601	569
TOTAL	PERCENT	76.6	75.6	78.6	75.6	76.6
NON-RESPIRATORY						
GENITO-URINARY		60	72	60	43	49
LYMPH GLAND		83	74	83	100	77
BONE AND JOINT		18	15	24	23	21
CENT.NERV.SYST.		7	9	9	6	9
OTHER		23	28	27	22	18
	NUMBER	191	190	203	194	174
TOTAL	PERCENT	23.4	24.4	21.4	24.4	23.4
	NUMBER	817	779	949	795	743
ALL CASES	PERCENT	100.0	100.0	100.0	100.0	100.0

Lymphadenitis - There were 77 cases, representing 44.3% of the total non-respiratory tuberculosis (a decrease of 23.0% from 1981.) Females continued to outnumber males, contributing 50 (64.9%) of the cases. Reactivations accounted for 3.9% of the cases; 70.3% of new cases occurred in the under-45 age groups.

Bone and Joint Tuberculosis accounted for 21 cases, 13 males and 8 females, representing 12.1% of the total non-respiratory tuberculosis. Of the new cases, eight (42.1%) occurred in persons under 45 years of age. Two cases (9.5%) were reactivations. The 21 cases represented an 8.7% decrease from 23 cases reported in 1981.

Other - The non-respiratory cases included one 41-year-old female laboratory technician who accidentally inoculated her left ring finger in the laboratory. Although microscopy of the purulent exudate was negative, two types of mycobacteria - M. tuberculosis and M. avium-intracellulare - were grown from the exudate and anti-tuberculosis chemotherapy was commenced. The lesion cleared completely within two weeks, but, after one week of treatment, she developed a severe drug reaction necessitating discontinuation of drugs. Because of her extreme reluctance to take further anti-tuberculosis medication, therapy was not recommended. She has remained well.

TABLE 3

BACTERIOLOGICAL STATUS

ACTIVE TUBERCULOSIS - ONTARIO 1982

DIAGNOSIS	BACILLARY ON SMEAR		BACILLARY ON CULTURE		NON-BACILLARY*		TOTAL	
	NO.	%	NO.	%	NO.	%	NO.	%
FAR ADVANCED	59	85.5	1	1.4	9	13.0	69	100.0
MODERATELY ADVANCED	141	72.7	20	10.3	33	17.0	194	100.0
MINIM.& EXTENT UNSPEC.	96	39.5	64	26.3	83	34.2	243	100.0
PRIMARY	1	10.0	3	30.0	6	60.0	10	100.0
MILIARY	14	87.5	1	6.3	1	6.3	16	100.0
PLEURISY	10	29.4	7	20.6	17	50.0	34	100.0
OTHER RESPIRATORY	-	-	2	66.7	1	33.3	3	100.0
NON-RESPIRATORY	83	47.7	58	33.3	33	19.0	174	100.0
TOTAL	404	54.4	156	21.0	183	24.6	743	100.0

* SMEAR NEGATIVE OR NOT REPORTED

BACTERIOLOGICAL STATUS

The bacteriological findings in the 743 active cases in 1982 are presented in Table 3. Bacteriological confirmation was obtained - by microscopy, culture, or both - in just over three quarters of the cases (560 - 75.4%). In nearly one half of the cases (367 - 49.4%), both smear and culture were positive.

Considering the post-primary respiratory cases - the main transmitters of organisms - 381 (75.3%) of the total of 506 cases were positive on either microscopic examination or culture or both. It is generally recognized that transmission of tuberculosis is from patients whose sputum is both smear and culture positive; patients whose sputum is only positive on culture are considered to be non-transmitters. Over one-half - 275 (54.3%) - of the 506 cases of post-primary respiratory tuberculosis were positive on both smear and culture; 85 (16.8%) were smear negative and culture positive, and 21 (4.2%) were positive on smear but culture was either negative or not done.

As in previous years, positive bacteriology of the post-primary respiratory cases varied directly with the extent of the disease. Of the far advanced cases, 87.0% were confirmed bacteriologically, compared with 83.0% of the moderately advanced cases and 65.8% of the minimal cases.

Primary tuberculosis is recognized to be of low infectivity. Four of the ten cases in 1982 were bacteriologically positive but only one of these was positive on both smear and culture.

Bacteriological confirmation of the diagnosis of pleural effusion was obtained in 50% of the 34 reported cases.

Extrapulmonary tuberculosis, in the absence of respiratory disease, is usually non-infectious even if bacteriologically positive. Of the 174 cases in 1982, 141 (81%) were confirmed bacteriologically.

Comparison of the bacteriological status of active disease in the past five years is portrayed in Table 3A overleaf.

TABLE 3A

BACTERIOLOGICAL STATUS

ACTIVE TUBERCULOSIS - ONTARIO 1978 - 1982

DIAGNOSIS	PERCENTAGE BACILLARY (SMEAR AND/OR CULTURE)				
	1978	1979	1980	1981	1982
FAR ADVANCED	90.3	89.3	82.7	85.5	87.0
MODERATELY ADVANCED	75.5	81.9	72.5	79.1	83.0
MINIM.& EXTENT UNSPEC	62.1	64.6	49.1	62.6	65.8
PRIMARY	28.6	50.0	47.1	33.3	40.0
MILIARY	82.6	0.0	77.8	62.5	93.8
PLEURISY	50.0	57.6	38.5	61.5	50.0
OTHER RESPIRATORY	50.0	83.3	76.9	62.5	66.7
NON-RESPIRATORY	72.8	75.1	83.7	80.4	81.0
TOTAL	69.6	73.4	65.1	71.7	75.4

The growth of organisms, identified as M. tuberculosis, from clinical or pathological specimens is essential for the definitive diagnosis of tuberculosis. It is well recognized, however, that, in a varying proportion of cases, in whom the diagnosis of tuberculosis is not significantly in doubt and who respond to anti-tuberculosis chemotherapy, the organisms are never isolated on culture. In some of these, microscopic examination is also negative; in others, acid-fast and/or fluorescent bacilli are identified on smear but culture is negative. These cases are classified as tuberculosis on the basis of clinical findings and response to chemotherapy although the validity of the diagnosis may be questioned, especially if organisms resembling M. tuberculosis are not seen on microscopy or are only seen in one specimen.

As tuberculosis continues to decline, atypical mycobacteria are being isolated and identified with increasing frequency from clinical and pathological specimens. The finding of organisms resembling M. tuberculosis on microscopy, even when repeated, is thus not necessarily evidence of tuberculosis. This can only be ascertained on identification of the organisms grown from the specimen. Many atypical mycobacteria have no clinical significance and are not pathogenic to man. Some, however, do cause disease in various organs and tissues, including the lungs. Since it is generally acknowledged that these organisms are not usually transmitted from person to person, disease due to atypical mycobacteria is not notifiable, so statistical information relating to it is not available.

TABLE 4

EXTENT OF DISEASE - POST-PRIMARY (ADULT-TYPE) RESPIRATORY TUBERCULOSIS

ONTARIO 1978 - 1982

DIAGNOSIS		1978	1979	1980	1981	1982
FAR ADVANCED	NUMBER	72	56	75	62	69
	PERCENT	13.4	10.7	11.5	11.7	13.6
MODERATELY ADVANCED	NUMBER	209	193	236	177	194
	PERCENT	38.8	36.9	36.3	33.5	38.3
MINIMAL & EXTENT UNSPECIFIED	NUMBER	257	274	340	289	243
	PERCENT	47.8	52.4	52.2	54.7	48.0
TOTAL	NUMBER	538	523	651	528	506
	PERCENT	100.0	100.0	100.0	100.0	100.0

POST-PRIMARY RESPIRATORY TUBERCULOSIS
EXTENT OF DISEASE

Table 4 shows the extent of disease in the 506 cases of adult-type (post-primary) respiratory disease for 1982 and similar tabulation for the preceding four years. In 1982, the extent of the disease was ascertained in all cases. Thus the 243 cases under "Minimal and extent unspecified" were, in fact, all "minimal".

Males accounted for 71.0% of the far advanced, 64.9% of the moderately advanced and 56.8% of the minimal cases in 1982.

As in previous years, older patients tended to have more advanced disease: 72.5% of the far advanced cases were 45 years and over.

Again, as might be anticipated, reactivated disease tended to be more extensive than new active disease: 11.6% of the far advanced cases were reactivations, compared with 9.8% of the moderately advanced and 5.8% of the minimal cases.

TABLE 5

REACTIVATED TUBERCULOSIS

ONTARIO 1982

	TOTAL		REACTIVATION		NEW ACTIVE	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
MALES	425	100.0	28	6.6	397	93.4
FEMALES	318	100.0	27	8.5	291	91.5
TOTAL	743	100.0	55	7.4	688	92.6

TABLE 5A

REACTIVATED TUBERCULOSIS - ONTARIO 1978 - 1982

REACTIVATED TUBERCULOSIS AS PERCENTAGE OF TOTAL CASES

	1978	1979	1980	1981	1982
MALES	15.0	10.6	11.0	9.3	6.6
FEMALES	11.6	11.4	9.4	7.9	8.5
TOTAL	13.6	10.9	10.3	8.7	7.4

REACTIVATION OF TUBERCULOSIS

Reactivation, defined as disease occurring in a patient with a documented history of previous active disease, was noted in 55 of the 743 cases (7.4%), giving a rate of 0.6/100,000, a decrease of 20.3% from 1981 (Table 5).

Of the total respiratory cases, 7.7% were reactivations. In genitourinary disease 8.2% were reactivations, in lymphadenitis 3.9% and in bone and joint 9.5%.

Table 5A outlines reactivations expressed as percentages of the total cases, for the past five years.

The decreasing proportion of reactivated cases over the past five years may be an indication of the increased effectiveness of modern treatment regimens containing both isoniazid and rifampin. It may also reflect the improved compliance of patients resulting from the use of shorter courses - one year or less - of effective treatment. If all patients were to faithfully take anti-tuberculosis drugs to which their organisms are sensitive, in the correct dosage for nine to twelve months, the incidence of reactivation would almost certainly be minimal.

TABLE 6

LENGTH OF INACTIVE INTERVAL

REACTIVATED TUBERCULOSIS - ONTARIO 1978 - 1982

LENGTH OF INACTIVE INTERVAL	PERCENTAGE OF REACTIVATED CASES					
	1978	1979	1980	1981	1982 PERCENT	1982 NUMBER
UNDER 1 YEAR	0.0	0.0	0.0	0.0	0.0	0
1 YEAR	0.0	0.0	0.0	0.0	0.0	0
2 YEARS	8.1	4.7	6.2	7.2	1.8	1
3 YEARS	0.9	4.7	3.1	1.4	5.5	3
4 YEARS	4.5	3.5	2.1	1.4	5.5	3
5 - 7 YEARS	15.3	11.8	6.2	8.7	10.9	6
8 - 20 YEARS	21.6	20.0	21.6	15.9	18.2	10
OVER 20 YEARS	49.5	55.3	60.8	65.2	58.2	32
T O T A L	100.0	100.0	100.0	100.0	100.0	55

REACTIVATIONS - LENGTH OF INACTIVE INTERVAL

Precise information on the interval between inactivity and reactivation of disease was available in all of the reactivated cases in 1982.

Table 6 (opposite) shows that, over the past four years, over one-half of reactivations occurred in patients who were treated more than 20 years ago, when treatment was, by modern standards, less than adequate. In 1982, 32 of the 55 reactivated cases (58.2%) were in this category.

As in the previous four years, no reactivations occurred within one year of the disease becoming inactive. Only one case reactivated in the second year. Early reactivation after completion of therapy is an indication of the ineffectiveness of treatment - either because the infecting organisms are drug-resistant, or the therapy is inappropriate or inadequate in dosage or duration, or the patient is non-compliant. With modern treatment regimens, permanent cure of tuberculosis can be expected in the majority of cases, but careful supervision of patients on chemotherapy is required to ensure and encourage their continued taking of drugs for the prescribed time period as well as to detect any side-effects of the drugs.

TABLE 6A

PREVIOUS X-RAY APPEARANCE - ONTARIO 1962

NEW ACTIVE CASES EXCLUDING PRIMARY AND PLEURISY TUBERCULOSIS

	TOTAL NEW ACTIVE	PREVIOUS X-RAY APPEARANCE OF INACTIVE TUBERCULOSIS 'REACTIVATION II'	
	NUMBER	NUMBER	PERCENT
MALES	369	6	1.6
FEMALES	276	8	2.9
TOTAL	645	14	2.2

THERE WERE 631 CASES WITH NO INFORMATION AS TO PREVIOUS X-RAYS
AND 0 CASES WHERE NO X-RAYS WERE TAKEN
AND 0 PREVIOUS X-RAYS NORMAL

PREVIOUS -X-RAY APPEARANCE

In 1982, 2.2% of the new active cases were known to have prior x-ray abnormalities suggestive of previously undiagnosed respiratory tuberculous infection. Unfortunately, information on prior x-ray appearance was available in only 2.6% of the new post-primary and 1.2% of the new non-respiratory cases, so it is conceivable that this percentage should actually be higher.

TABLE 7

TUBERCULOSIS MORBIDITY AMONG CANADIAN AND FOREIGN-BORN

ACTIVE TUBERCULOSIS - ONTARIO 1982

GROUP	ACTIVE TUBERCULOSIS NUMBER OF CASES	PERCENT OF CASES	POPULATION AT RISK *	PERCENT OF POP.*	ESTIMATED RATE PER 100,000 1978	1979	1980	1981	1982
CANADIAN BORN (EXCLUDING N.A.INDIANS)	224	30.1	6,586,429	75.5	4.4	4.2	4.0	3.4	3.4
FOREIGN-BORN	496	66.8	2,022,066	23.2	26.0	24.9	34.1	27.7	24.5
N.AMERICAN INDIANS	23	3.1	113,305	1.3	63.7	50.0	54.0	55.1	20.3
T O T A L	743	100.0	8,715,800***	100.0	9.7	9.2	11.1	9.2	8.5

* BASED ON 1981 CENSUS

*** 1982 ESTIMATED POPULATION

TUBERCULOSIS IN CANADIAN-BORN AND FOREIGN-BORN

Table 7 outlines the estimated case rates per 100,000 of Canadian-born persons (excluding North American Indians), Foreign-born, and North American Indians in the years 1978 -1982 and the table below presents the percentages of active cases in these three groups over the same time period.

	PERCENTAGE OF ACTIVE CASES				
	1978	1979	1980	1981	1982
Canadian-born (excluding Indians)	35.1	35.4	27.8	28.6	30.1
Foreign-born	59.6	60.2	68.3	66.7	66.8
North American Indians	5.3	4.4	3.9	4.8	3.1

While the number of cases (224) and the rate per 100,000 (3.4) in the Canadian-born remained almost identical to the 1981 figures (227 - 3.4), there was a decrease of 34 (530 to 496) in the number of foreign-born, representing a decline of 11.6% in the rate per 100,000 (27.7 to 24.5). However, the percentage of active cases among the foreign-born remains almost the same, namely 66.8% of all cases of active tuberculosis (cf. 66.7% in 1981). It is noteworthy that while the foreign-born represent less than one quarter (23.2%) of the population in Ontario, they contributed more than two-thirds (66.8%) of the cases of active tuberculosis.

Another interesting feature of Table 7 is the decrease in tuberculosis rate per 100,000 of North American Indians in 1982. Whereas in 1981, 38 cases of active tuberculosis were reported in this group representing 55.1 per 100,000, in 1982 there were only 23 cases, representing 20.3 per 100,000 - a 63.2% decrease in the rate. There is no obvious explanation for this

reduction and time will tell whether it is maintained or is only a temporary and insignificant finding. It is important to note that, in spite of this decrease, the rate in North American Indians is still almost six times the rate in other Canadian-born persons.

The higher tuberculosis rates in the foreign-born (especially East Asian) and North American Indians than in Canadian-born (excluding Indians) are of importance in relation to recommendations for screening and also to diagnosis of illness in these groups - tuberculosis should be high on the list of differential diagnoses.

TABLE 7A

SITE AND TYPE OF DISEASE AMONG CANADIAN AND FOREIGN-BORN

ACTIVE TUBERCULOSIS - ONTARIO 1982

DIAGNOSIS	CANADIAN BORN (EXCL.N.A.INDIANS)		N.AMERICAN INDIANS		FOREIGN-BORN		T O T A L *	
	NO.	%	NO.	%	NO.	%	NO.	%
POST-PRIMARY	177	35.0	13	2.6	316	62.5	506	100.0
1.FAR ADVANCED	35	50.7	3	4.3	31	44.9	69	100.0
2.MODERATELY ADVANCED	63	32.5	6	3.1	125	64.4	194	100.0
3.MINIMAL & EXTENT UNSPEC	79	32.5	4	1.6	160	65.8	243	100.0
PRIMARY	5	50.0	2	20.0	3	30.0	10	100.0
MILIARY	8	50.0	2	12.5	6	37.5	16	100.0
PLEURISY	9	26.5	1	2.9	24	70.6	34	100.0
OTHER RESPIRATORY	1	33.3	-	0.0	2	66.7	3	100.0
RESPIRATORY TOTAL	208	35.1	18	3.2	351	61.7	569	100.0
GENITO-URINARY	13	26.5	1	2.0	35	71.4	49	100.0
LYMPH GLAND	4	5.2	-	0.0	73	94.8	77	100.0
BONE AND JOINT	4	19.0	2	9.5	15	71.4	21	100.0
CENTRAL NERVOUS SYSTEM	2	22.2	1	11.1	6	66.7	9	100.0
ALIMENTARY	1	11.1	1	11.1	7	77.8	9	100.0
SKIN	-	0.0	-	0.0	3	100.0	3	100.0
OTHER ORGANS	-	0.0	-	0.0	6	100.0	6	100.0
NON-RESPIRATORY TOTAL	24	13.8	5	2.9	145	83.3	174	100.0
ALL CASES (GRAND TOTAL)	224	30.1	23	3.1	496	66.8	743	100.0

* EXCLUDES 0 CASES IN WHICH COUNTRY OF BIRTH IS UNKNOWN

SITE AND TYPE OF DISEASE AMONG CANADIAN AND FOREIGN-BORN

In considering the site and type of disease, according to the preceding categories, it is found that 35.1% of the respiratory cases were Canadian-born, 61.7% were Foreign-born and 3.2% were North American Indians. Further refinement shows that of post-primary cases, 35.0% were Canadian-born, 62.5% Foreign-born and 2.6% North American Indians. In primary disease, the respective percentages were 50.0%, 30.0% and 20.0%.

The non-respiratory categories, for 1982, show Canadian-born accounting for 13.8% of the total cases, Foreign-born accounting for 83.3% and North American Indians accounting for 2.9%. Thus the higher incidence of tuberculosis in the foreign-born is particularly evident in cases of extrapulmonary tuberculosis. This has been a characteristic of previous years but the 1982 figure of 83.3% is higher than ever noted before. Lymphadenitis occurred predominantly in the Foreign-born at 94.8%, Canadian-born 5.2% and North American Indians 0.0%. In genitourinary tuberculosis, Foreign-born accounted for 71.4% of the cases (cf. 60.5% in 1981), Canadian-born decreased to 26.5% (from 32.6%) and North American Indians contributed the remaining 2.0% of the cases (a decrease from 7.0% in 1981).

TABLE 8

COUNTRY OF BIRTH AND YEAR OF ARRIVAL IN CANADA

FOREIGN-BORN CASES OF ACTIVE TUBERCULOSIS - ONTARIO 1982

COUNTRY OF BIRTH		YEAR OF ARRIVAL IN CANADA							
		BEFORE 1958	58-62	63-67	68-72	73-77	78-82	YEAR UNKNOWN	TOTAL
BRITISH ISLES		21	2	3	-	3	1	4	34
CHINA		5	3	3	13	15	36	1	76
CZECHOSLOVAKIA		2	-	-	3	-	-	-	5
FINLAND		3	-	-	-	1	1	-	5
GERMANY		4	-	-	-	-	-	-	4
GREECE		-	2	2	1	-	3	-	8
HUNGARY		2	-	-	-	-	1	-	3
INDIA & PAKISTAN		1	1	1	9	17	23	-	52
ITALY		5	4	10	2	1	4	1	27
JAPAN		1	-	-	-	1	-	-	2
OTHER ASIA		-	-	-	6	10	80	-	96
OTHER COUNTRIES		-	-	-	3	12	21	-	36
OTHER EUROPE		7	-	3	1	1	1	-	13
PHILIPPINES		-	1	2	6	8	21	-	38
POLAND		14	-	-	-	1	8	-	23
PORTUGAL		1	1	4	7	3	6	-	22
U.S.A.		1	1	-	-	-	1	-	3
U.S.S.R.		16	1	-	-	-	1	-	18
WEST INDIES		-	-	2	4	2	3	1	12
YUGOSLAVIA		8	2	2	-	3	4	-	19
TOTAL	NUMBER	91	18	32	55	78	215	7	496
	PERCENT	18.3	3.6	6.5	11.1	15.7	43.3	1.4	100.0

YEAR OF ARRIVAL IN CANADA - FOREIGN-BORN

In all but seven of the 496 cases of active disease in Foreign-born, the year of arrival in Canada was known, as per Table 8.

The greatest percentage of cases, 59.1%, occurred in persons arriving in Canada within the last 10 years: 43.3% having been in Canada five years or less. The remainder, 39.5%, accounted for persons whose residence in Ontario exceeded 10 years. (In 1.4% year of arrival in Canada was unknown).

More than one half of the foreign-born cases (264:53.2%) were born in Asia (China, India, Pakistan, S.E. Asia, Philippines, etc.) Of these, 211 (79.9%) had come to Canada between 1973 and 1982; 160 (60.6%) within the past five years.

TABLE 9

METHOD OF DETECTION

ACTIVE TUBERCULOSIS - ONTARIO 1962

AGENCIES AND PROGRAMMES RESPONSIBLE FOR DETECTION	RESPIRATORY		NON-RESPIRATORY		TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
PRIVATE PHYSICIANS	182	32.0	82	47.1	264	35.5
HOSPITALS	240	42.2	83	47.7	323	43.5
CHEST CLINICS	85	14.9	7	4.0	92	12.4
SURVEYS	4	0.7	-	-	4	0.5
OTHER	54	9.5	2	1.1	56	7.5
NO INFORMATION	4	0.7	-	-	4	0.5
TOTAL	569	100.0	174	100.0	743	100.0

METHOD OF DETECTION

As in previous years, the majority of cases of active tuberculosis were diagnosed either by private physicians or in general hospitals. These together accounted for diagnosis in 79.0% of all cases: 74.2% of respiratory cases and 94.8% of non-respiratory disease.

While Provincial Chest Clinics played a relatively minor role in the diagnosis of tuberculosis - in 92 cases (12.4%) - many other cases were referred to the clinics for treatment and supervision. Moreover, after September 8, when announcement of the termination of the Chest Disease Service was made, further new cases were not seen in the Provincial Chest Clinics.

TABLE 9B

REASON FOR DETECTION BY TYPE AND EXTENT OF DISEASE

ACTIVE RESPIRATORY TUBERCULOSIS - ONTARIO 1982

REASON FOR DETECTION	PERCENTAGE OF CASES					
	POST PRIMARY			PRIMARY	MILIARY	PLEURISY
	FAR ADV.	MOD. ADV.	MIN.& EXT. UNSPEC.			
SYMPTOMS	87.0	85.1	67.5	40.0	62.5	91.2
ROUTINE	1.4	12.4	21.8	10.0	6.3	5.9
CONTACT	-	0.5	4.1	50.0	-	-
NOT STATED	11.6	2.1	6.6	-	31.3	2.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 9A

METHOD OF DETECTION BY TYPE AND EXTENT OF DISEASE

ACTIVE RESPIRATORY TUBERCULOSIS - ONTARIO 1982

METHOD OF DETECTION	PERCENTAGE OF CASES					
	POST PRIMARY			PRIMARY	MILIARY	PLEURISY
	FAR ADV.	MOD. ADV.	MIN.& EXT. UNSPEC.			
PRIVATE PHYSICIANS AND HOSPITALS	73.9	86.1	63.4	90.0	68.8	82.4
CHEST CLINICS	11.6	10.8	21.4	-	-	11.8
SURVEYS	-	-	1.2	-	-	2.9
OTHER	14.5	3.1	12.8	10.0	31.3	2.9
NO INFORMATION	-	-	1.2	-	-	-
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

REASON FOR DETECTION, BY TYPE AND EXTENT OF DISEASE

The relationships between the type and extent of disease and the reasons for the methods of detection are illustrated in Tables 9A and 9B for the various types of respiratory tuberculosis.

As would be expected, advanced disease was diagnosed because of symptoms more than minimal disease, while one half of the cases of primary tuberculosis were brought to light as a result of contact examination. Most of the cases of pleural effusion and miliary tuberculosis, for whom information on detection was available, were discovered because of symptoms.

Increasing difficulty has been encountered in recent years in obtaining accurate and complete information on both the method of and reason for detection. The figures in these tables, therefore, can only be considered as rough indicators.

TABLE 10

MORBIDITY RATES FOR PROVINCE AND RATE BY

REGIONS, COUNTIES AND DISTRICTS PER 100,000

ACTIVE TUBERCULOSIS - ONTARIO 1978-82

NUMBER OF CASES

PROVINCE OF ONTARIO	1978	1979	1980	1981	1982 *	AVERAGE ANNUAL RATE FOR 5 YEARS
CASES	817	779	949	795	743	
POPULATION (THOUSANDS)	8443.8	8583.3	8570.4	8625.1	8715.8	
RATE	9.7	9.2	11.1	9.2	8.5	9.5

REGION, COUNTY, DISTRICT						1982 * POPULATION	1982 RATE	
EASTERN								
DUNDAS	-	-	2	3	-	18,950	-	5.3
FRONTENAC	4	7	5	3	4	108,895	3.7	4.1
GLENGARRY	1	-	1	2	-	28,095	-	3.9
GRENVILLE	-	1	-	-	-	27,263	-	0.7
HASTINGS	5	9	4	5	4	107,170	3.7	5.1
LANARK	1	-	3	-	-	47,080	-	1.8
LEEDS	2	2	-	-	1	54,007	1.9	1.9
LENNOX AND ADDINGTON	-	3	2	2	1	32,925	3.0	4.9
OTTAWA-CARLETON	33	32	36	49	40	555,440	7.2	7.0
PRESCOTT	1	5	2	-	2	30,836	6.5	6.6
PRINCE EDWARD	1	-	-	-	1	22,405	4.5	1.8
RENFREW	4	4	4	14	5	87,802	5.7	7.1
RUSSELL	2	2	1	-	1	22,850	4.4	5.4
STORMONT	5	2	2	1	2	42,150	3.2	3.9
TOTAL	59	67	62	79	61	1,197,868	5.1	5.5
CENTRAL EAST								
DURHAM	16	10	7	12	14	290,417	4.8	4.3
HALIBURTON	-	-	1	-	-	11,397	-	1.8
MUSKOKA	1	-	1	1	-	36,705	-	1.6
NORTHUMBERLAND	2	4	1	1	3	65,217	4.6	3.4
PEEL	32	22	32	41	48	507,090	9.5	7.6
PETERBOROUGH	2	3	3	6	2	103,477	1.9	3.1
SIMCOE	8	6	11	10	8	220,311	3.6	3.8
VICTORIA	2	2	4	1	2	46,330	4.1	4.7
YORK (EXCL.METRO TORONTO)	21	6	8	4	12	268,855	4.5	4.4
YORK METRO TORONTO ONLY	359	356	351	362	411	2,136,659	19.2	17.5
TOTAL	473	409	419	440	500	3,760,456	13.5	12.5

TABLE 18

MORBIDITY RATES FOR PROVINCE AND RATE BY

REGIONS, COUNTIES AND DISTRICTS PER 100,000

ACTIVE TUBERCULOSIS - ONTARIO 1978-82

NUMBER OF CASES

REGION, COUNTY, DISTRICT	1978	1979	1980	1981	1982	1982 * POPULATION	1982 RATE	AVERAGE ANNUAL RATE FOR 5 YEARS
CENTRAL WEST								
BRANT	7	7	5	5	7	105,402	6.6	6.0
DUFFERIN	1	2	2	1	1	31,763	3.1	4.5
HALDIMAND-NORFOLK	1	1	4	1	3	89,845	3.3	2.2
HALTON	11	9	12	12	8	256,229	3.1	4.2
HAMILTON-WENTWORTH	38	26	35	35	29	414,591	7.0	7.9
NIAGARA	21	19	35	19	15	369,232	4.1	5.9
WATERLOO	17	22	16	19	10	310,781	3.2	5.5
WELLINGTON	4	6	7	9	4	131,447	3.0	4.6
TOTAL	100	92	116	101	77	1,711,290	4.5	5.7
SOUTHWESTERN								
BRUCE	5	2	3	1	2	60,158	3.3	4.4
ELGIN	3	2	4	6	1	70,033	1.4	4.6
ESSEX	29	26	20	32	17	313,209	5.4	7.9
GREY	-	3	4	2	2	74,120	2.7	3.0
HURON	-	1	1	2	1	56,355	1.8	1.8
KENT	10	6	4	10	2	107,337	1.9	6.0
LAMBTON	11	12	10	8	7	124,600	5.6	7.0
MIDDLESEX	14	21	15	20	11	321,531	3.4	5.0
OXFORD	3	4	4	1	1	84,534	1.2	3.0
PERTH	6	1	2	-	3	66,196	4.5	3.6
TOTAL	81	78	67	82	47	1,280,073	3.7	5.6
NORTHEASTERN								
ALGOMA	4	10	21	8	7	134,130	5.1	7.6
COCHRANE	14	13	17	12	5	98,012	5.1	12.7
MANITOULIN	1	1	2	3	2	10,894	18.4	16.4
NIPISSING	8	4	6	4	2	80,859	2.5	6.0
PARRY SOUND	2	2	2	2	1	33,078	3.0	5.5
SUDBURY	13	14	8	6	10	187,019	5.3	5.4
TIMISKAMING	2	11	5	6	2	41,223	4.9	12.6
TOTAL	44	55	61	41	29	587,215	4.9	7.9

TABLE 10

MORBIDITY RATES FOR PROVINCE AND RATE BY

REGIONS, COUNTIES AND DISTRICTS PER 100,000

ACTIVE TUBERCULOSIS - ONTARIO 1978-82

NUMBER OF CASES

REGION,COUNTY,DISTRICT	1978	1979	1980	1981	1982	1982 * POPULATION	1982 RATE	AVERAGE ANNUAL RATE FOR 5 YEARS
NORTHWESTERN								
KENORA	24	13	19	15	10	60,207	16.6	27.5
RAINY RIVER	3	3	4	5	4	22,828	17.5	16.1
THUNDER BAY	20	11	15	25	14	155,841	9.0	11.1
TOTAL	47	27	38	45	28	238,896	11.7	15.7

* ESTIMATED POPULATION FOR 1982 BASED ON 1981 CENSUS

** KENORA INCLUDES THE COUNTY OF KENORA AND DISTRICT OF PATRICIA

THERE WERE 1 CASE WHERE THERE WAS NO OFFICIAL RESIDENCE IN ONTARIO

MORBIDITY RATES BY REGIONS, COUNTIES AND DISTRICTS

Variations in tuberculosis morbidity in the six regions of Ontario are shown in Table 10.

Central East Region maintain the highest annual rate, 13.5/100,000, followed by Northwestern Ontario with a rate of 11.7/100,000.

North American Indians again influenced the morbidity rates in the two Northern regions - 19 (50.0%) of the 38 cases in Indians living in those regions - 14 residing in Northwestern Ontario and accounting for 50.0% of the cases in this region.

In 12 of the 52 counties and regional municipalities the annual rates exceeded the five-year average annual rate.

Central East (13.5) was the only region above the 1982 provincial average.

34 of the 52 counties and regional municipalities had five or fewer cases. Of these, six counties - Dundas, Glengarry, Grenville, Lanark, Haliburton, Muskoka - did not report any active cases during 1982. Grenville and Haliburton did not report any active cases for two consecutive years.

TABLE 11

ACTIVE TUBERCULOSIS IN THE MAJOR ONTARIO CITIES

1978 - 1982

CITIES OF OVER 100,000 POPULATION *	1978 CASES	1979 CASES	1980 CASES	1981 CASES	1982 CASES
METRO TORONTO (2,137,395)	389	356	351	362	411
CITY OF TORONTO (599,217)	180	165	154	152	193
NORTH YORK (559,521)	-	66	85	64	96
MISSISSAUGA (315,056)	24	14	21	32	37
HAMILTON (306,434)	32	22	31	32	20
OTTAWA (295,163)	27	23	28	40	26
LONDON (254,280)	12	19	10	16	10
WINDSOR (192,083)	23	25	14	26	13
SUDBURY (186,847	-	-	-	4	6
BRAMPTON (149,030)	-	7	11	7	12
KITCHENER (139,734)	4	8	10	9	8
ST. CATHARINES (124,018)	7	8	16	6	6
OSHAWA (117,519)	5	4	2	8	6
BURLINGTON (114,853)	3	7	5	5	3
THUNDER BAY (112, 486)	11	7	10	20	9

* 1981 Estimated population for each city is shown in brackets. Figures for 1982 not available at time of printing.

TUBERCULOSIS IN THE MAJOR CITIES IN ONTARIO

There are 14 cities in Ontario with populations over 100,000. Table 11 demonstrates the incidence of tuberculosis over the past five years in these cities.

Tuberculosis is recognized, in developed countries, as an urban problem. This is especially true in Ontario and is compounded by the fact that immigrants are attracted to large cities where employment possibilities are greatest and where there are ethnically similar groups of appreciable size.

Metropolitan Toronto (including the City of Toronto and the City of North York) and the other 12 cities accounted for 567 (76.3%) of the total active cases registered in Ontario in 1982 compared with 567 (71.3%) in 1981. Metropolitan Toronto, accounted for 55.3% of the registered cases (45.5% in 1981).

TABLE 11A

ACTIVE TUBERCULOSIS IN METROPOLITAN TORONTO
1979 - 1982

	1979	1980	1981	1982
METRO TORONTO	357	401	362	411
CITY OF TORONTO	165	195	152	193
EAST YORK	19	16	32	15
ETOBICOKE	29	27	41	37
NORTH YORK	66	89	64	96
SCARBOROUGH	51	52	50	48
YORK	27	22	23	22

TABLE 12

ACTIVE TUBERCULOSIS IN PRINCIPAL CITIES OF ONTARIO

1978 - 1982

CITIES	1978	1979	1980	1981	1982
CITY OF TORONTO	180	165	154	152	193
THUNDER BAY	11	7	10	20	9
METRO TORONTO	389	356	351	362	411
OTTAWA	27	23	28	40	26
WINDSOR	23	25	14	26	13
TIMMINS	3	4	8	6	-
WATERLOO	-	-	2	6	-
SARNIA	8	9	5	6	5
NORTH YORK	-	66	85	64	96
GUELPH	-	-	6	8	4
HAMILTON	32	22	31	32	20
MISSISSAUGA	24	14	21	32	37
PETERBOROUGH	2	3	2	5	1
SAULT STE. MARIE	2	6	13	6	2
NIAGARA FALLS	-	-	5	5	4
OSHAWA	5	4	2	8	6
KITCHENER	4	8	10	9	8
LONDON	12	19	10	16	10
KINGSTON	4	4	4	3	4
ST. CATHARINES	7	8	16	6	6
BRAMPTON	-	7	11	7	12
BURLINGTON	3	7	5	5	3
BRANTFORD	7	5	5	3	6
CAMBRIDGE	-	-	4	3	3
NORTH BAY	6	-	1	2	1
CORNWALL	4	2	1	1	2
SUDBURY	10	9	4	4	6

TUBERCULOSIS IN PRINCIPAL CITIES OF ONTARIO

Table 12 compares the number of cases of active tuberculosis in 25 major Ontario cities in the years 1978 to 1982 (Note that Metro Toronto includes the City of Toronto and North York).

These 25 cities accounted for 599 (80.6%) of the 743 Ontario cases. The corresponding figures for 1981 were 628 (79.0%) of 795 cases.

TABLE 13

NOTIFIED CASES BY COUNTIES

ACTIVE TUBERCULOSIS - ONTARIO 1978 - 82

COUNTY	TOTAL CASES 1982	NOTIFIED NO. 1982	NOTIFIED % 1982	PERCENT NOTIFIED 1978-1982	COUNTY	TOTAL CASES 1982	NOTIFIED NO. 1982	NOTIFIED % 1982	PERCENT NOTIFIED 1978-1982
ALGOMA	7	7	100.0	80.0	NIPISSING	2	2	100.0	41.7
BRANT	7	5	71.4	64.5	NORTHUMBERLAND	3	3	100.0	72.7
BRUCE	2	2	100.0	92.3	OTTAWA-CARLETON	40	38	95.0	92.1
COCHRANE	5	4	80.0	63.9	OXFORD	1	-	-	69.2
DUFFERIN	1	1	100.0	71.4	PARRY SOUND	1	1	100.0	100.0
DUNDAS	-	-	-	80.0	PEEL	48	45	93.8	89.7
DURHAM	14	13	92.9	91.5	PERTH	3	3	100.0	91.7
ELGIN	1	1	100.0	75.0	PETERBOROUGH	2	2	100.0	87.5
ESSEX	17	16	94.1	95.2	PRESCOTT	2	1	50.0	70.0
FRONTENAC	4	4	100.0	82.6	PRINCE EDWARD	1	1	100.0	100.0
GLENGARRY	-	-	-	100.0	RAINY RIVER	4	4	100.0	100.0
GRENVILLE	-	-	-	100.0	RENFREW	5	5	100.0	83.9
GREY	2	2	100.0	81.8	RUSSELL	1	1	100.0	66.7
HALDIMAND-NORFOLK	3	3	100.0	60.0	SIMCOE	8	6	75.0	65.1
HALIBURTON	-	-	-	-	STORMONT	2	2	100.0	83.3
HALTON	8	6	75.0	65.4	SUDBURY	10	8	80.0	74.5
HAMILTON-WENTWORTH	29	26	89.7	85.9	THUNDER BAY	14	14	100.0	87.1
HASTINGS	4	2	50.0	85.2	TIMISKAMING	2	1	50.0	88.5
HURON	1	1	100.0	80.8	VICTORIA	2	1	50.0	45.5
KENORA	10	7	70.0	72.8	WATERLOO	10	5	50.0	73.8
KENT	2	2	100.0	96.9	WELLINGTON	4	3	75.0	73.3
LAMBTON	7	6	85.7	81.3	YORK (EXCL.METRO TORONTO)	12	9	75.0	62.3
LANARK	-	-	-	50.0	YORK METRO TORONTO ONLY	411	380	92.5	89.8
LEEDS	1	1	100.0	80.0					
LENNOX AND ADDINGTON	1	1	100.0	75.0					
MANITOULIN	2	1	50.0	55.6					
MIDDLESEX	11	9	81.8	84.0					
MUSKOKA	-	-	-	66.7					
NIAGARA	15	10	66.7	70.6	NO FIXED ADDRESS	1	1	100.0	59.4
					TOTAL	743	666	89.6	80.1

* KENORA INCLUDES THE COUNTY OF KENORA AND DISTRICT OF PATRICIA

NOTIFICATION OF ACTIVE TUBERCULOSIS

Table 13 provides data on the number and percentage of notified cases, broken down by county, in 1982 alone, as in the five-year period, 1978-1982. Notified cases include those for whom the appropriate format was submitted following communication with the Medical Officer of Health. The overall percentage of cases notified in such a manner was 89.5% in 1982.

TABLE 14

ACTIVE TUBERCULOSIS BY OCCUPATION IN ONTARIO 1982

OCCUPATION	M	F	OCCUPATION	M	F
ADVERTISING AGENTS	-	-	NUCLEAR ENERGY WORKERS	-	-
AIR, RAIL AND ROAD TRANSPORT WORKERS	10	-	NURSES, AIDES AND ORDERLIES	1	12
ARCHITECTS, DRAUGHTSPERSONS AND SURVEYORS	-	-	OFFICE AND ELECTRONIC DATA PROCESSING STAFF	4	18
ARMED FORCES	2	-	PACKERS, STOCKKEEPERS AND SHIPPERS	3	-
AUTOMOTIVE, GARAGE AND SERVICE STATION WORKERS	6	1	PAINTERS, DECORATORS AND PLASTERERS	4	-
BARBERS AND HAIRDRESSERS	1	-	PHYSICIANS, DENTISTS, OPTICIANS AND PHARMACISTS	4	-
BUTCHERS AND HUNTERS	1	-	POLICE AND FIREFIGHTERS	2	-
CARPENTERS AND CABINET MAKERS	3	-	POSTAL EMPLOYEES	1	-
CHILDREN	4	1	PRINTERS AND BOOKBINDERS	4	-
CHIROPODISTS AND PODIATRISTS	-	-	RESTAURANT WORKERS, BAKERS AND CONFECTIONERS	11	4
CLERGY, RELIGIOUS AND SOCIAL WORKERS	1	6	RETIRED	118	71
CONSTRUCTION WORKERS	5	-	SCIENTISTS AND MATHEMATICIANS	1	-
DIETICIANS	-	-	SHOEMAKING AND LEATHER WORKERS, FURRIERS	2	-
ENGINEERS - CHEMICAL, CIVIL, ELECTRICAL AND MECHANICAL	6	-	SHOPKEEPERS, BUYERS AND SALES STAFF, RETAIL AND WHOLESALE	6	5
ENTERTAINMENT INDUSTRY PERSONNEL, ARTISTES AND ATHLETES	-	-	STREET SWEEPERS AND LABOURERS	13	2
FACTORY WORKERS, TEXTILE WORKERS AND UPHOLSTERERS	17	16	STUDENTS	25	23
FARMING, NURSERY AND ANIMAL CARE WORKERS	1	-	TEACHERS AND LIBRARIANS	-	4
FORESTRY AND LUMBER WORKERS	3	-	TECHNICIANS AND ENGINEERS, HEALTH CARE	2	1
FUNERAL DIRECTORS AND STAFF	1	-	TELECOMMUNICATIONS WORKERS	1	-
GARMENT MAKERS AND JEWELLERS	1	1	UNEMPLOYED	44	13
GAS AND HYDRO WORKERS	-	-	WRITERS, ARTISTS, DESIGNERS AND PHOTOGRAPHERS	1	-
HOUSEKEEPERS, CLEANERS AND JANITORS	4	5	OTHERS	10	2
HOUSEWIVES	-	53	NOT STATED	75	77
INDUSTRIAL WORKERS	1	-		-	-
INVESTMENT, INSURANCE AND REAL ESTATE TRADERS	-	-		-	-
JUDGES, LAWYERS, COURT OFFICERS AND ACCOUNTANTS	2	1		-	-
LAUNDERERS AND DRY CLEANERS	2	-			
MAINTENANCE, ELECTRICIANS AND PLUMBERS	8	-		-	-
MANAGERS, SUPERVISORS AND INSPECTORS	5	1		-	-
MECHANICS AND REPAIRERS	5	-		-	-
METAL WORKERS	3	1			
MINERS	1	-			
			TOTAL	425	318

OCCUPATION OF PERSONS WITH ACTIVE DISEASE

The occupations of the 743 active cases are outlined in Table 14.

There were 352 or 47.7% of the total cases who were not counted as part of the labour force. Comprising this group were: 189 retired, 53 housewives, 57 unemployed, 48 students and 5 pre-school children.

Foodhandlers, barbers and hairdressers accounted for 15 cases and one case respectively.

TABLE 14A
ACTIVE TUBERCULOSIS BY OCCUPATION
HEALTH CARE PERSONNEL

OCCUPATION	1980	1981	1982
Nurses (student, graduate and practical)	22	10	12
Physicians, Dentists and Opticians	3	1	4
Technicians (x-ray or laboratory only)	5	1	-
Orderlies and Porters	1	1	1
Housekeeping and Cleaners	1	-	3
Laundry workers	1	-	-
Clerical staff	3	4	1
Maintenance, hospital central supply	-	1	-
Kitchen help	2	-	-
TOTAL	38	18	21

HEALTH CARE PERSONNEL

The increased risk of tuberculosis occurring in health care workers has been recognized for some years. Guidelines for the Prevention of Tuberculosis Transmission in Hospitals in Ontario were published in 1980.*

In 1982, the incidence of tuberculosis in Health Care Personnel increased by 16.7% from 18 cases in 1981 to 21 cases in 1982. This is still, however, considerably less than the 38 cases in 1980.

* Published by the Ontario Lung Association Ontario Thoracic Society 1980.

TABLE 15

DEATHS ATTRIBUTED TO TUBERCULOSIS

ONTARIO - 1982

Age Group	No. With Active Tuberculosis: Primary Cause		Contributory Cause		Total No. Active (Rate per 100,000*)			No. with Inactive Tuberculosis			Total with Tuberculosis (Rate per 100,000*)		
	M.	F.	M.	F.	M. -	F. -	T. -	M.	F.	T.	M. -	F. -	T. -
0 - 9	-	-	-	-	- -	- -	- -	-	-	-	- -	- -	- -
10 - 24	-	-	-	-	- -	- -	- -	-	-	-	- -	- -	- -
25 - 34	-	-	-	1	- -	1 (0.1)	1 (0.1)	-	-	-	- -	1 (0.1)	1 (0.1)
35 - 44	2	1	-	-	2 (0.4)	1 (0.2)	3 (0.3)	-	-	-	2 (0.4)	1 (0.2)	3 (0.3)
45 - 54	2	-	-	-	2 (0.4)	- -	2 (0.2)	1	-	1	3 (0.6)	- -	3 (0.3)
55 - 64	3	-	2	1	5 (1.3)	1 (0.2)	6 (0.7)	1	3	4	6 (1.5)	4 (0.9)	10 (1.2)
65 - 74	5	3	3	1	8 (3.3)	4 (1.3)	12 (2.2)	3	2	5	11 (4.5)	6 (2.0)	17 (3.1)
75+	8	9	4	3	12 (9.8)	12 (5.4)	24 (7.0)	2	2	4	14 (11.4)	14 (6.3)	28 (8.1)
TOTAL	20	13	9	6	29 (0.7)	19 (0.4)	48 (0.6)	7	7	14	36 (0.8)	26 (0.6)	62 (0.7)

*Based on population figures from 1981 Census (See Table 1)

TUBERCULOSIS MORTALITY 1982

The office of the Registrar General notified the Chest Disease Service (and, after the termination of this service, the Disease Control and Epidemiology Service) of all deaths reported as attributed to tuberculosis. These cases were studied - with the aid of any available information, e.g. discharge summaries, autopsy reports - and, where tuberculosis was not considered to be a factor contributing to death, the cases were not included in the figures in Table 15.

During 1982, 62 deaths were considered to be attributable to tuberculosis (compared with 51 in 1981), giving a mortality rate of 0.7 per 100,000 (0.6 in 1981). Of these, 48 had active tuberculosis (32 in 1981), 45 being new cases and three having continuing active disease. Fourteen deaths were attributed to inactive tuberculosis (19 in 1981).

Tuberculosis was considered to be the primary cause of death in 33 of the 48 cases with active disease: of these, 21 had pulmonary disease, six had miliary and disseminated tuberculosis; three, tuberculous meningitis; two, other extrapulmonary tuberculosis; and one, silico-tuberculosis. None of these patients were under 40 years of age; 25 were over 65, including 17 over 75 years.

In the other 15 cases, active tuberculosis was considered to be a factor contributing to death. Among the primary causes in these cases were: chronic obstructive lung disease (2), other lung diseases with pulmonary insufficiency (3), cardiorespiratory failure (2), cardiac disease or failure (4). All of these were over 60 years of age with the exception of one female patient, aged 31, who had miliary tuberculosis associated with post-eclamptic renal cortical necrosis.

The 14 cases, in whom inactive tuberculosis contributed to death, ranged in age from 49 years to 84 years, with an average of 68. Thirteen had pulmonary tuberculosis - mostly extensive. The one non-pulmonary case had a cerebral tuberculoma with hemiplegia. Eight of the pulmonary cases had previously had major thoracic surgery - six, thoracoplasty (one bilateral; and one with pleurectomy), and two, pneumonectomy. Of the five other pulmonary cases, two had pulmonary fibrosis, one had a destroyed lung, one had haemoptysis from a persistent cavity and one had empyema complicating far advanced pulmonary tuberculosis.

In addition, 22 cases were reported with active tuberculosis, which, on further study, was not considered to be a significant factor causing death. Of these, 14 were new cases diagnosed in 1982, four had continuing active disease and four were reactivated cases. A further 36 cases, who died from other causes, had inactive tuberculosis, which, however, was not thought to have contributed to death.

Table 15A presents a summary of all the deaths, reported in 1982, of patients who had active or inactive tuberculosis.

TABLE 15A

DEATHS OF PATIENTS WITH TUBERCULOSIS 1982

TUBERCULOSIS	ACTIVE	INACTIVE	TOTAL
Causing or contributing to death	48	14	62
Not considered a factor in death	22	36	58
TOTAL	70	50	120

FIGURE 2

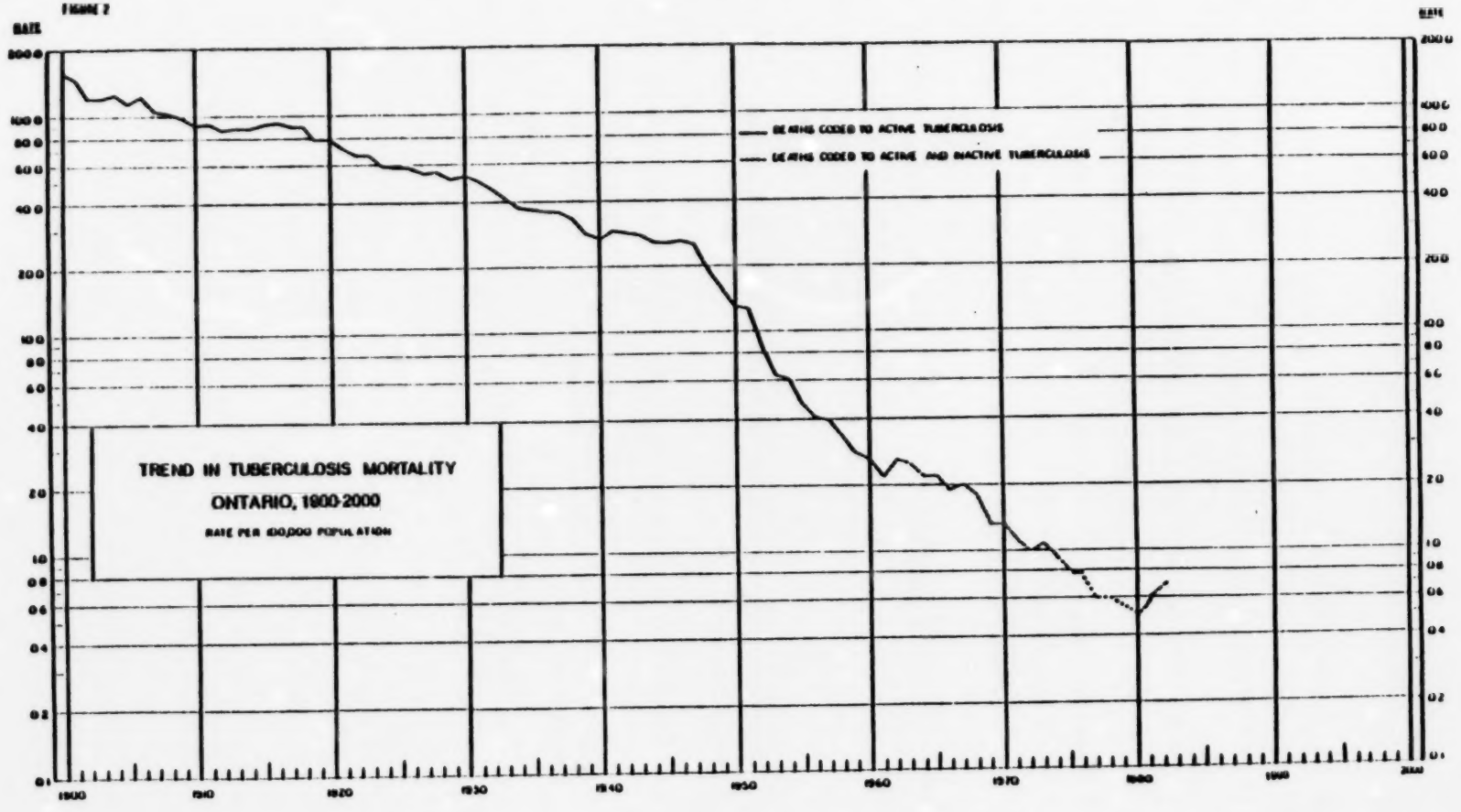
RATE
RATE
DEATHS CODED TO ACTIVE TUBERCULOSIS
DEATHS CODED TO ACTIVE AND INACTIVE TUBERCULOSIS
TREND IN TUBERCULOSIS MORTALITY
ONTARIO, 1900-2000
RATE PER 100,000 POPULATION
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

TABLE 16

INITIAL MANAGEMENT OF TUBERCULOSIS ACTIVE CASES - ONTARIO 1982

	NUMBER	PERCENTAGE
ADMITTED TO HOSPITALS		
- DURING 1982	299	
- BEFORE MAY 1983	-	
- IN SANATORIUM OUTSIDE ONTARIO	-	
SUBTOTAL	299	40.2
NOT ADMITTED TO HOSPITAL	444	59.8
TOTAL	743	100.0

MANAGEMENT OF THE 444 CASES NOT INITIALLY ADMITTED TO HOSPITAL

ON DRUG TREATMENT		
- PRIVATE PHYSICIAN	132	
- PROVINCIAL CHEST CLINIC	186	
- GENERAL HOSPITAL CHEST CLINIC	81	
SUBTOTAL	399	89.9
TREATMENT NOT KNOWN		
- UNDER SUPERVISION	8	
- MANAGEMENT UNCERTAIN	1	
- UNABLE TO TRACE	0	
SUBTOTAL	9	2.0
OTHERS		
- DIED OR LEFT ONTARIO	36	8.1
TOTAL	444	100.0

MANAGEMENT OF ACTIVE TUBERCULOSIS

Of the 743 cases of active tuberculosis for 1982, 299 started their treatment as inpatients of general hospitals or hospitals with tuberculosis units. This figure represented 40.2% of the total case load.

Table 16 also includes the initial management of the 444 cases not admitted to hospitals. Treatment details could not be obtained in 2.0% of those cases. However, 89.9% of outpatients were known to have been started on chemotherapy.

Provincial Chest Clinics were involved in the initial treatment of 46.6% of all cases, private physicians' care covered 33.1% and general hospital chest clinics 20.3%.

As previously stated, the involvement of the Provincial Chest Clinics in the diagnosis and management of new cases of tuberculosis terminated in September 1982 following the announcement on September 8 that the chest clinics would be closed by December 10, 1982. Thus the figure of 186 cases (46.6% of the total cases not admitted to hospital) for whose initial treatment the chest clinics were responsible, represents cases started on treatment from January to September. (Patients whose anti-tuberculosis treatment was already being managed by the chest clinics were advised that this was transferred to their private physicians.)

APPENDIX I

TUBERCULOSIS DUE TO M.BOVIS

As a result of tuberculin testing of cattle, slaughter of infected animals and pasteurization of milk, bovine tuberculosis, once a fairly common condition, has become sufficiently rare to justify special reporting. In spite of preventive measures, cases still occur. Four cases were notified in Ontario in 1982: three males and one female, between the ages 38 and 65 years. Two were of Canadian origin, one of these being a North American Indian, one was born in Scotland and one in Chile. Three had pulmonary disease, all moderately advanced, and organisms were isolated and identified on microscopy and culture in all three, and were found to be sensitive to the main anti-tuberculosis agents. One had disease of the left hip and femur and M.bovis was grown from fluid aspirated from the hip. The main features of these four cases are outlined in the following table:

TUBERCULOSIS DUE TO M.BOVIS ONTARIO 1982

Case	Sex	Birth-Date	Country of Origin	Site of Disease	Associated Condition
1	M	1945	Canada (Indian)	Lung	
2	F	1917	Scotland	Lung	Histiocytic Lymphoma
3	M	1939	Chile	Lung	Diabetes
4	M	1920	Canada	Hip, Femur	

APPENDIX II

TUBERCULOSIS CASES NOT INCLUDED IN THIS REPORT

This report, "Tuberculosis in Ontario 1982", like its predecessors, presents only cases of active tuberculosis notified for the first time, or reactivated, in 1982. It does not, of course, detail the many cases of inactive tuberculosis in the province. Most of these have been in Ontario for many years, but some came here in 1982 and others were first recognized in 1982. Since inactive tuberculosis is not notifiable, it is impossible to estimate the number of these cases.

Nor does this report give details of cases of "continuing active" tuberculosis. Most of these were diagnosed in 1981 and were reported in "Tuberculosis in Ontario 1981". They were started on treatment, and were still active at the beginning of 1982 but the majority became inactive during the year. There are some cases, however, who remain active in spite of treatment - mostly because of the development of drug-resistant organisms. Many of these patients were uncooperative in taking anti-tuberculosis drugs. Some cases continue to be active for years. For example, two cases have been continuously active since 1976. Both had far advanced pulmonary tuberculosis, the disease dating back many years. Both had tuberculous pleural effusion and broncho-pleural fistula. Both had frequent hospital admissions and numerous courses of anti-tuberculosis drugs, several different drug combinations being used. One, a male of 98 years, initially diagnosed in 1926, died in 1982. The other, a male of 83 years, first diagnosed in 1950, was still alive in 1983 with chest x-ray appearances unchanging for five years in spite of continuing expectoration of tuberculosis organisms, now resistant to most anti-tuberculosis agents.

A small group of patients with active tuberculosis not reported here, are visitors from other countries who are found to have tuberculosis while in Ontario. For example, a 53-year old male was visiting from Trinidad and gave no previous history of tuberculosis. While here he developed severe chest pain on exertion, followed by dizziness, vertigo, and difficulties in speech and vision. Investigation in hospital included a chest x-ray which showed right apical infiltrate "consistent with old tuberculosis". Sputum was negative on smear but three specimens all grew M.tuberculosis. Diagnosis was "minimal active pulmonary tuberculosis". By this time he had returned to Trinidad and the health authorities there were notified.

POOR

QUALITY

ORIGINAL